UNITED STATES PATENT AND TRADEMARK OFFICE

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/811,319	03/25/2004	Anne L. Testoni	KLA1P100/P1087	1372

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EXAMINER
YANTORNO, JENNIFER M

ART UNIT	PAPER NUMBER
2881	

DATE MAILED: 09/20/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

PTO-90C (Rev. 10/03)

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.
- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on _____.
2a)☐ This action is **FINAL**.   2b)☒ This action is non-final.
3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-27* is/are pending in the application.

    4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.
6)☒ Claim(s) *1-27* is/are rejected.
7)☐ Claim(s) _____ is/are objected to.
8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.
10)☒ The drawing(s) filed on *8/20/04* is/are: a)☐ accepted or b)☐ objected to by the Examiner.

    Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

    Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

    a)☐ All   b)☐ Some * c)☐ None of:

      1.☐ Certified copies of the priority documents have been received.

      2.☐ Certified copies of the priority documents have been received in Application No. _____.

      3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

    * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date *5/31/05*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Claim Objections

Claim 11 is objected to because of the following informalities: line 4, "know"

should be "known". Appropriate correction is required.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that

form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 1-7, 9, 10, and 16-23 are rejected under 35 U.S.C. 102(e) as being

anticipated by Dotan et al. (US 6,407,386 B1).

Regarding claim 1, Dotan teaches a method of classifying specimens based on

x-ray data obtained from such specimens, the method comprising providing x-ray data

from a plurality of known specimens having known characteristics that are classified into

a plurality of known classes (Col. 8, ln. 39-58), setting up a pattern recognition process

to automatically classify the known characteristics of the known specimens based on

the x-ray data from the known specimens (Col. 8, ln. 56-60), providing x-ray data from

an unknown specimen having an unknown characteristic of an unknown class (Col. 4,

ln. 20-30), and utilizing the pattern recognition process to automatically classify the

unknown characteristic of the unknown specimen based on the x-ray data from the unknown specimen (Col. 4, In. 1-6).

Regarding claims 2 and 17, Dotan teaches the method and apparatus for directing a charged particle beam toward each known specimen and detecting x-rays emitted from the each known specimen in response to the charged particle beam, wherein the detected x-rays form x-ray data having one or more intensity values at one or more energy levels (Col. 5, In. 56-62).

Regarding claims 3 and 18, Dotan teaches a method and apparatus for directing a charged particle beam toward the unknown specimen and detecting x-rays emitted from the unknown specimen in response to the charged particle beam, wherein the detected x-rays form x-ray data having one or more intensity values at one or more energy levels (Col. 5, In. 63-67, and Col. 6, In. 1-6).

Regarding claims 4 and 19, Dotan teaches that the known and unknown specimens are semiconductor devices or test structures (Col. 4, In. 2-4).

Regarding claims 5 and 20, Dotan teaches that the known and the unknown characteristics are each a defect and the known classes are known defect classes (Col. 4, In. 2-4).

Regarding claims 6 and 21, Dotan teaches that the known defect classes include defect compositions (Col. 4, In. 2-10).

Regarding claim 7, Dotan teaches each known defect class includes one or more characteristics selected from a group consisting of a particular defect composition, a defect location, an electrical type defect, and an open type defect (Col. 5, In. 3-6).

Regarding claims 9 and 22, Dotan teaches training a pattern recognition process

to recognize particular types of x-ray data as belonging to one of the known classes

(Col. 8, ln. 61-67, Col. 9, ln. 1-4).

Regarding claims 10 and 23, Dotan teaches the pattern recognition process is

selected from a group consisting of a neural net algorithm, a natural grouping algorithm,

and a wavelet algorithm (Col. 7, ln. 18-19).

Regarding claim 16, Dotan teaches an apparatus for classifying specimens

based on x-ray data obtained from such specimens comprising a beam generator

operable to direct a charged particle beam towards a specimen (Fig. 2, item 100), a

detector position to detect x-rays from the specimen in response to the charged particle

beam (Fig. 2, item 160), and a processor (Fig. 2, item 180) operable to perform the

method outlined in claim 1.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all

obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set
> forth in section 102 of this title, if the differences between the subject matter sought to be patented and
> the prior art are such that the subject matter as a whole would have been obvious at the time the
> invention was made to a person having ordinary skill in the art to which said subject matter pertains.
> Patentability shall not be negatived by the manner in which the invention was made.

Claims 8, 11-15, and 24-27 are rejected under 35 U.S.C. 103(a) as being

unpatentable over Dotan et al. (US 6,407,386 B1).

Regarding claim 8, Dotan teaches various defect classes but does not explicitly

state the class of a particular film thickness. However, a defect on the surface of the

substrate would invariably cause a change in film thickness. Therefore, it would have

been obvious to one skilled in the art at the time of the invention to include film

thickness in the class of detected defects to detect and correct the causes of the

particular film thickness in the production of the semiconductors.

Regarding claims 11 and 24, Dotan teaches a pattern recognition process

comprising associating a feature vector having a plurality of parameters with each

known specimen based on the each known specimen's x-ray data and storing the

values for each known specimen (Col. 4, In. 10-16). Regarding the rest of the

limitations of claim 11, Dotan's method of scanning and storing known samples into the

background library obviously requires weighting, normalization, and fitting of the data to

predetermined values for the comparison to work. Although Dotan does not explicitly

teach the use of weight values and class codes, the end effect of Dotan is the same as

the applicant.

Regarding claim 12 and 25, Dotan teaches associating a feature vector having a

plurality of parameters with the unknown specimen and comparing and matching the

unknown specimen with a predetermined defect type (Col.4, In. 1-9, Col. 6, In. 46-49).

Again, Dotan does not explicitly teach the use of weight values and class codes, but the

end effect of Dotan is the same as the applicant.

Regarding claims 13 and 26, Dotan teaches defining new defect types when the

defect does not match the defect material library (Col. 7, lines 1-19).

Regarding claim 14 and 27, Dotan teaches the parameters of each feature vector

of the known and unknown specimens include intensity values for each x-ray peak and

its associated energy level and one or more ratios of x-ray intensity values (Figs. 6a-7e).

Regarding claim 15, Dotan teaches that the parameter of each feature vector of the known and unknown specimens include a defect size (Col. 5, ln. 7-11).

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jennifer Yantorno whose telephone number is (571) 272-5918. The examiner can normally be reached on Monday-Friday, 9 am - 5 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, John Lee can be reached on (571) 272-2477. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

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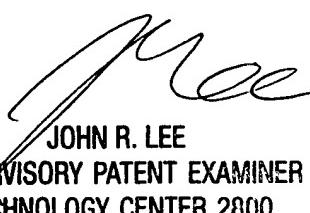
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